

CLAIMS

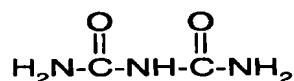
1. A method for preparing hydrazodicarbonamide which comprises the steps of:

obtaining biuret of Formula 1 and ammonia by pyrolysis of urea;

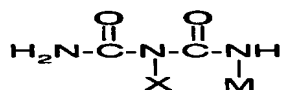
obtaining metal monohalobiuret salt of Formula 2 or 3 by reacting the obtained biuret with metal hypohalogen compound or with halogen and base; and

reacting the obtained metal monohalobiuret salt with ammonia including ammonia which is produced from the urea pyrolysis process, and the mole ratio of the metal monohalobiuret salt and the total ammonia is 1:1 ~1:1000.

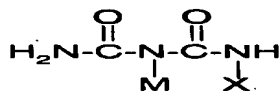
[Formula 1]



[Formula 2]



[Formula 3]



In Formula 2 and 3, M represents metal and X represents halogen.

2. The method for preparing hydrazodicarbonamide according to claim 1, wherein the temperature of pyrolysis of urea is 100 to 300°C.

3. The method for preparing hydrazodicarbonamide according to claim 1, wherein the urea pyrolysis process is carried out with removing ammonia from the reaction system thereof.

4. The method for preparing hydrazodicarbonamide according to claim 1, wherein the urea pyrolysis process is carried out with a process of injection of inert gas and/or with a process of reducing pressure of the reaction system thereof.

5. The method for preparing hydrazodicarbonamide according to claim 1, wherein the urea pyrolysis process is carried out in the presence of at least one catalyst selected from the group consisting of inorganic acid catalyst, and acid type catalyst, and substances including phosphorous.

6. The method for preparing hydrazodicarbonamide according to claim 1, wherein the mole ratio of the biuret and metal hypohalogen compound is 1: 0.1~1 : 2.

7. The method for preparing hydrazodicarbonamide according to claim 1, wherein the metal monohalobiuret salt is obtained by mixing metal hydroxide with the biuret of Formula 1, and then reacting the obtained product with halogen, or obtained by reacting the biuret of Formula 1 with gaseous halogen, and then mixing the obtained product with a base.

8. The method for preparing hydrazodicarbonamide according to claim 1, wherein the process of obtaining the metal monohalobiuret salt is carried out at a temperature of below 60°C.

9. The method for preparing hydrazodicarbonamide according to claim 1,

wherein the ammonia is liquid ammonia, gaseous ammonia or ammonium hydrate.

10. The method for preparing hydrazodicarbonamide according to claim 1,
wherein the reaction of the metal monohalobiuret salt with the ammonia is carried
out at a temperature of 0 to 150 °C.

11. The method for preparing hydrazodicarbonamide according to claim 1,
wherein the solvent of the reaction is a mixture of water and a second solvent, and
the second solvent is a polar solvent selected from the group consisting of water,
methanol, ethanol, propanol, isopropanol and mixtures thereof, or a aprotic solvent
selected from the group consisting of dimethylformamide, dimethylsulfoxide,
dimethylacetamide and mixtures thereof.

12. An apparatus for preparing hydrazodicarbonamide comprising:
a pyrolysis furnace to obtain biuret and ammonia by pyrolyzing urea;
a recrystallization reactor to purify the biuret obtained from the pyrolysis
furnace;
a first reactor to obtain an metal monohalobiuret salt by reacting the biuret
with metal hypohalogen compound or with halogen and base;
a second reactor to synthesize the hydrazodicarbonamide by reacting the
monohalobiuret metal salt with ammonia; and
an ammonia evaporator to separate the excess ammonia from
hydrazodicarbonamide and to supply the separated ammonia to an ammonia
concentrator, wherein the ammonia concentrator is to concentrate the excess
ammonia and ammonia obtained at the pyrolysis furnace, and is to supply the
concentrated ammonia to the second reactor.

13. The apparatus for preparing hydrazodicarbonamide according to claim 12, wherein the pyrolysis furnace has a gas injector for injecting inert gas, which does not react with isocyanic acid, into the pyrolysis furnace.

5 14. The apparatus for preparing hydrazodicarbonamide according to claim 12, wherein the pyrolysis furnace has means for lowering pressure to remove the ammonia from the pyrolysis furnace.